

Customer : WOOREE LIGHTING HOLDINGS

Specification for Approval

Part Name : WA22MCF-XX70D

Customer : WOOREE LIGHTING HOLDINGS 2013. . . .

Checked	Checked	Approved	Remark
/	/	/	

WOOREE E & L Co., Ltd. 2013. 12 . 17 .

Designed	Checked	Approved
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WOOREE E&L Co.,Ltd.

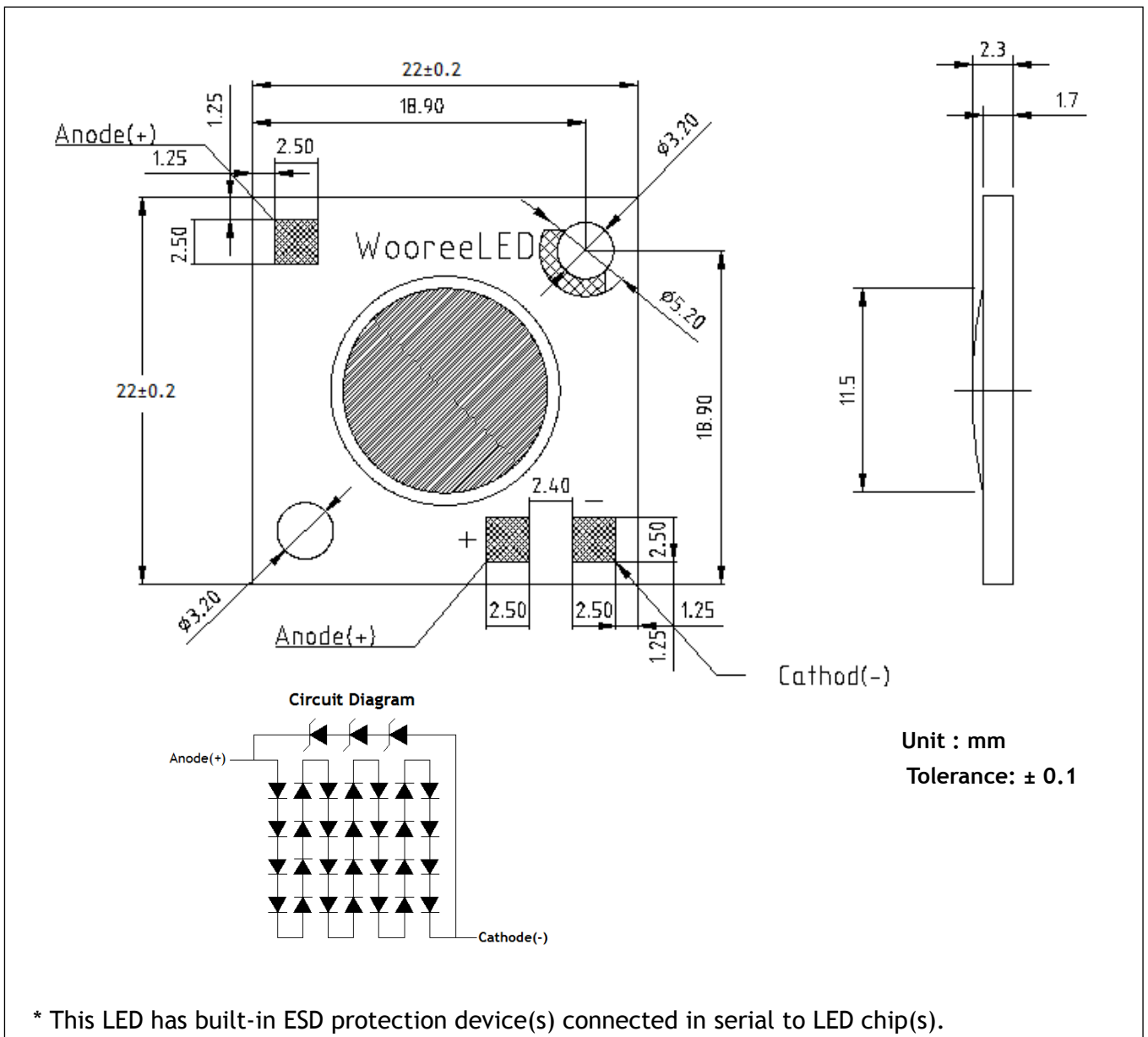
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1. Features

- Package size is 22.0 * 22.0* 2.3t (mm)
- Lead (Pd) free product - RoHS compliant
- View angle ($\Delta\theta : 120^\circ \times 120^\circ$) for uniform illuminance
- Low thermal resistance $R_{th,j-s} < 3 \text{ }^\circ\text{C/W}$
- High-power LED in COB technology
- Application : Substitution for Incandescent lamp / Fluorescent lamp / Signal lamp
Other applications

2. Outline Dimension



3. Absolute maximum ratings

Item	Symbol	Absolute Maximum Ratings	Unit
Forward Current	I_F	90	mA
Power dissipation	P_d	8	W
Operating Temperature	T_{opr}	-30 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Junction Temperature	T_J	115	°C

*1. Pulse Width \leq 10msec, Duty \leq 10%

4. Electrical/Optical characteristics

($T_a=25^\circ\text{C}$)

Item	Symbol	Condition	Value			Unit	
			Min	Typ	Max		
Luminous Flux*1-1)	lm	$I_F=85\text{mA}$	3000K	750	770	840	lm
			5000K	780	800	900	
			5700K	780	800	900	
Forward Voltage *1-2)	V_f	$I_F=85\text{mA}$	84	90	96	V	
Reverse Voltage *1-2)	V_r	$I_F=-10\text{mA}$	2.1	2.7	3.3	V	
Color Temperature *1-3) [CIE 1931 Coordinates]	CCT	$I_F=85\text{mA}$	3000K	2870	3045	3220	K
			5000K	4734	5008	5282	
			5700K	5150	5500	5850	
Viewing Angle	$2\theta_{1/2}$	$I_F=85\text{mA}$	-	120	-	Deg.	
Color Rendering Index	R_a	$I_F=85\text{mA}$	72	-	-	-	
Thermal Resistance	$R_{th,j-s_2}$			3		°C/W	

*1. Equipment measured tolerance

1) Luminous Flux is $\pm 10\%$

2) Forward voltage is $\pm 5\%$, Reverse Voltage is $\pm 5\%$,

3) Color Temperature is $3045 \pm 175\text{K}$ (3000K)/ $5008 \pm 274\text{K}$ (5000K) / $5500 \pm 350\text{K}$ (5700K)

*2. $R_{th,j-s}$ is Thermal Resistance (Junction - Slug)

5. Ranks

(1) Forward Current

(Ta=25℃)

Rank	Condition	Value	Unit
0	I _F =85mA	84 - 87	V
1		87 - 90	
2		90 - 93	
3		93 - 96	

(2) Luminous Flux

(Ta=25℃)

Rank	Condition	3000K	5000K	5700K
750	I _F =85mA Unit : lm	750 - 780		
780		780 - 810	780 - 810	780 - 810
810		810 - 840	810 - 840	810 - 840
840		840 - 870	840 - 870	840 - 870
870			870 - 900	870 - 900

(3) Chromaticity coordinates

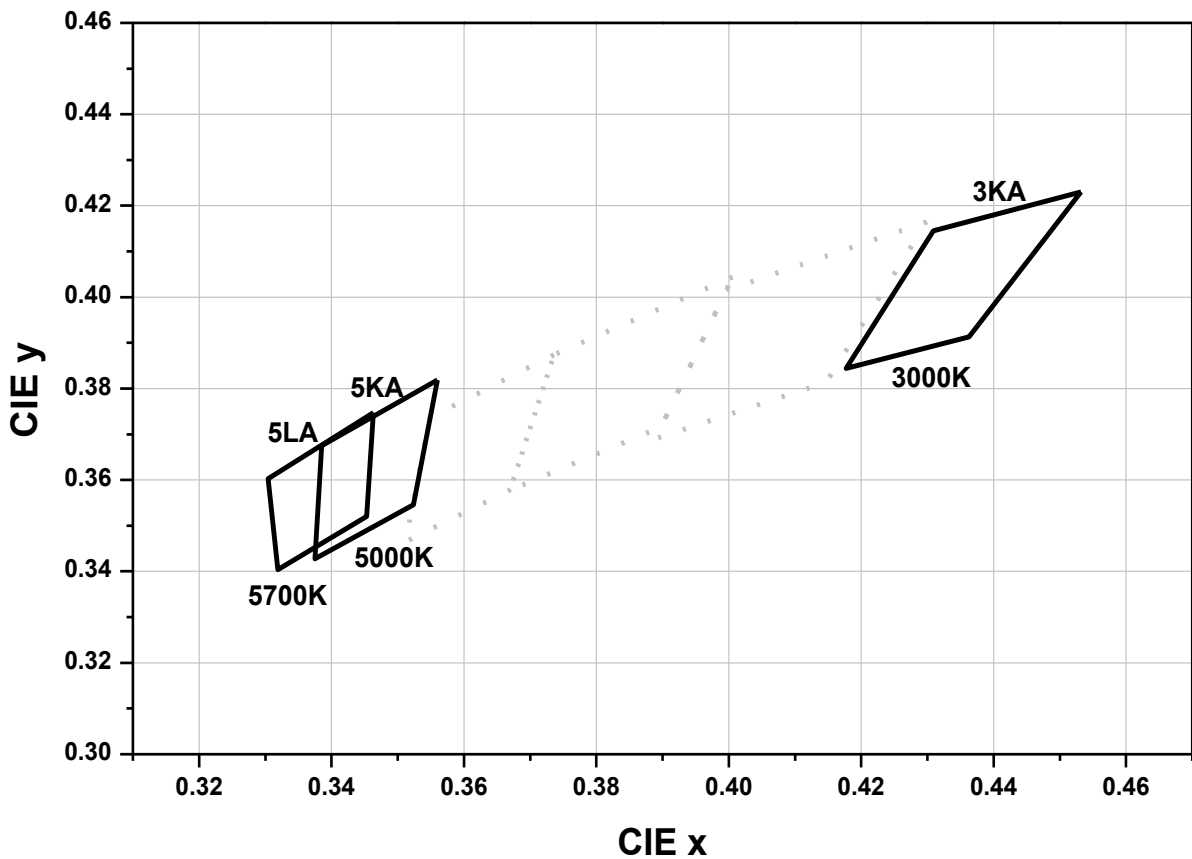
($I_F=85\text{mA}$, $T_a=25^\circ\text{C}$)

3000K		5000K		5700K	
3KA		5KA		5LA	
Cx	Cy	Cx	Cy	Cx	Cy
0.4532	0.4230	0.3560	0.3819	0.3463	0.3747
0.4309	0.4145	0.3385	0.3675	0.3304	0.3603
0.4177	0.3844	0.3375	0.3428	0.3319	0.3404
0.4363	0.3913	0.3524	0.3546	0.3453	0.3520
0.4532	0.4230	0.3560	0.3819	0.3463	0.3747

* Luminous Intensity follow the CIE1931

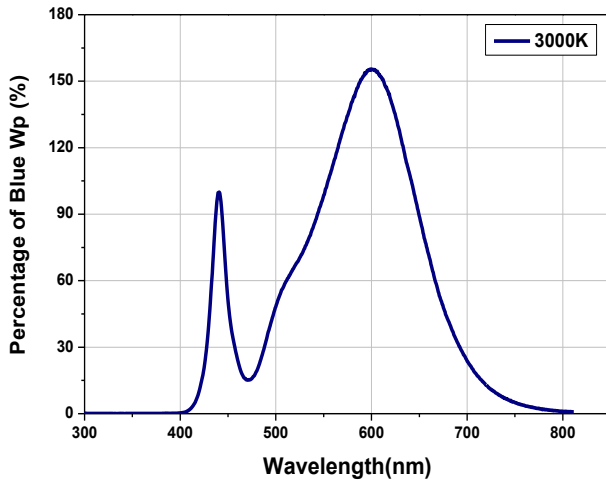
(4) Chromaticity Coordinates Diagram

($I_F=85\text{mA}$, $T_a=25^\circ\text{C}$)

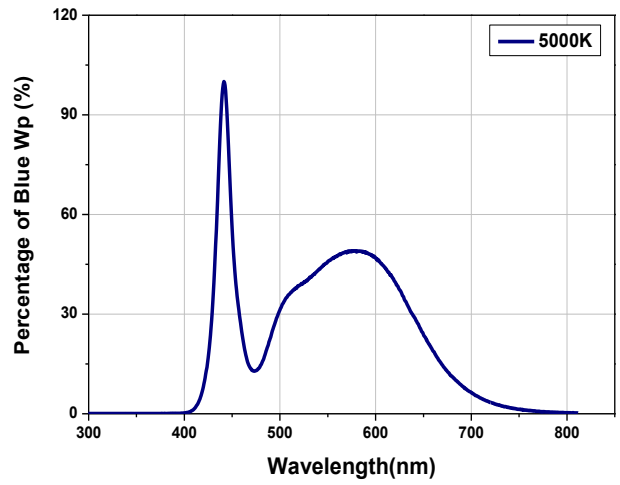


6. Color Spectrum

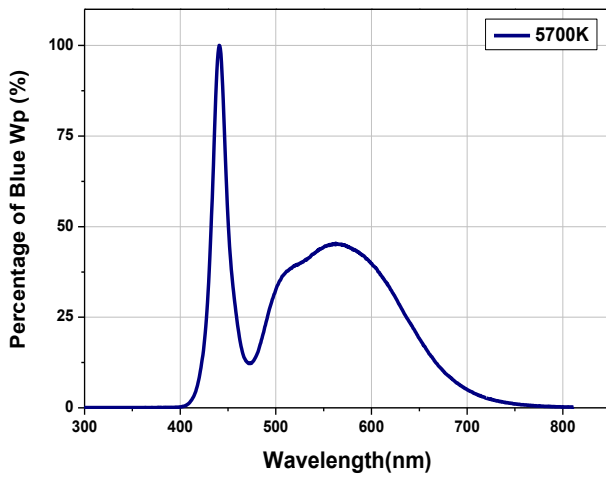
($I_F=85\text{mA}$, $T_a = 25^\circ\text{C}$)



3000K



5000K

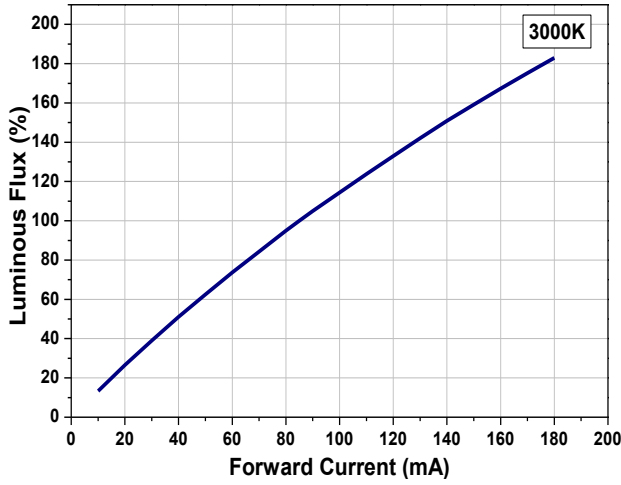


5700K

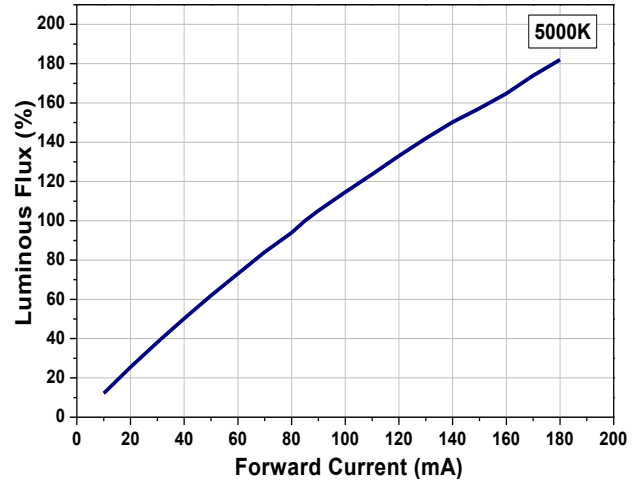
7. Characteristic Diagrams

(1) Luminous Flux vs. Forward Current

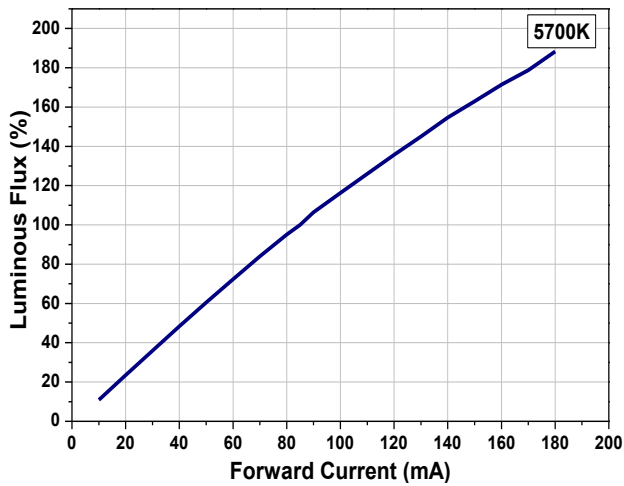
(Ta = 25°C)



3000K



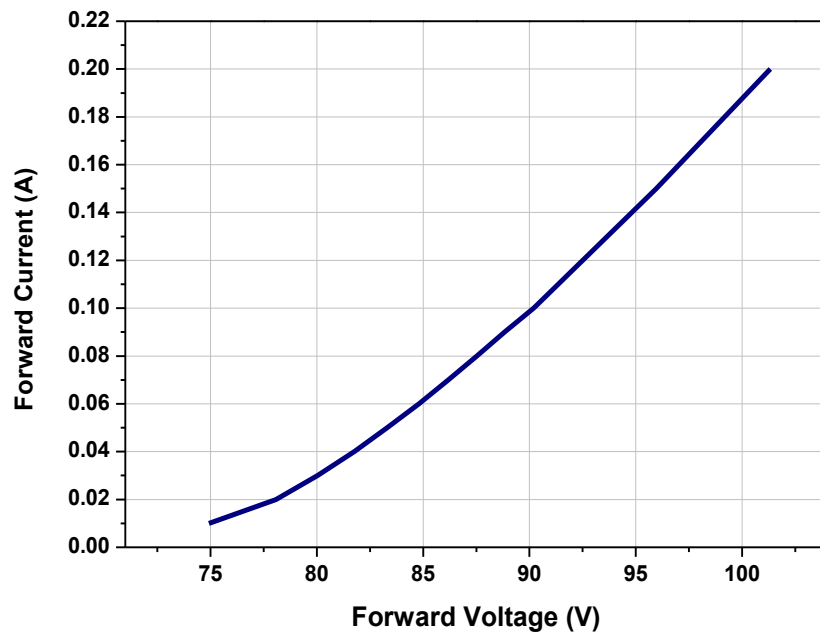
5000K



5700K

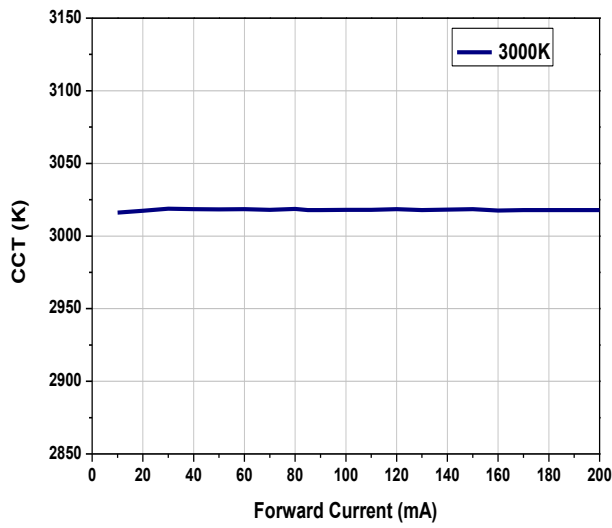
(2) Forward Current vs. Forward Voltage

(Ta=25°C)

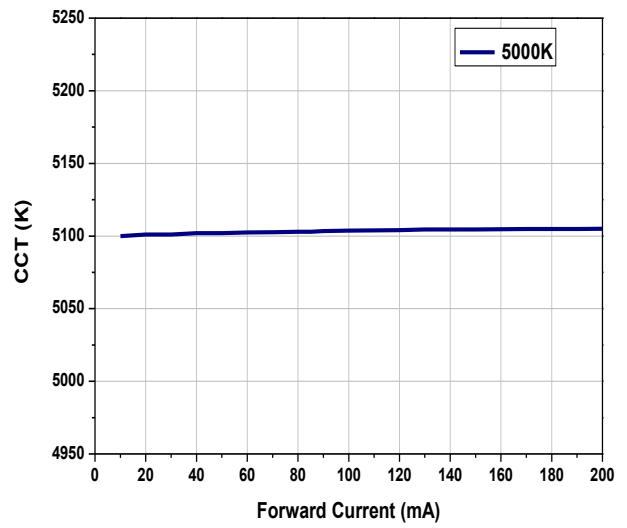


(3) CCT vs. Forward Current

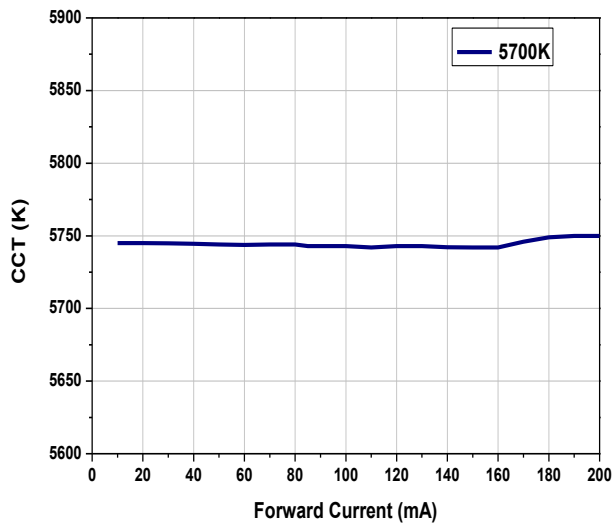
(Ta = 25°C)



3000K



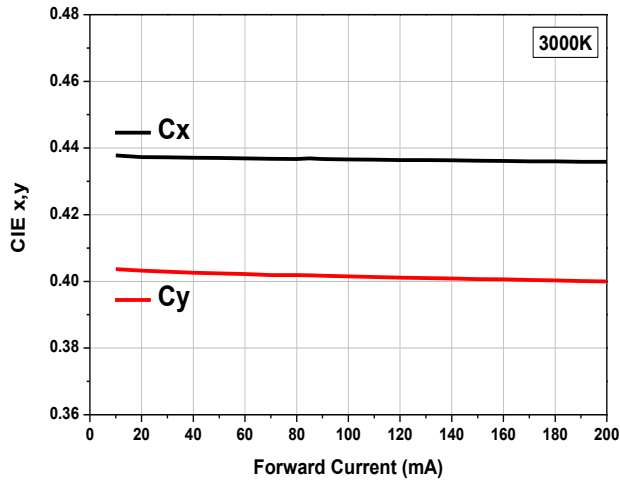
5000K



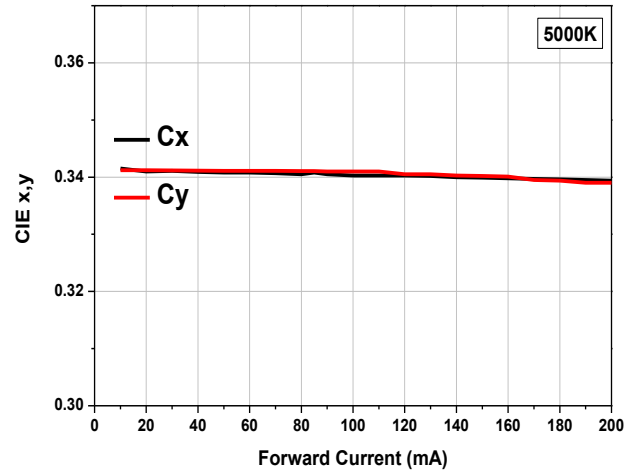
5700K

(4) CIE x,y vs. Forward Current

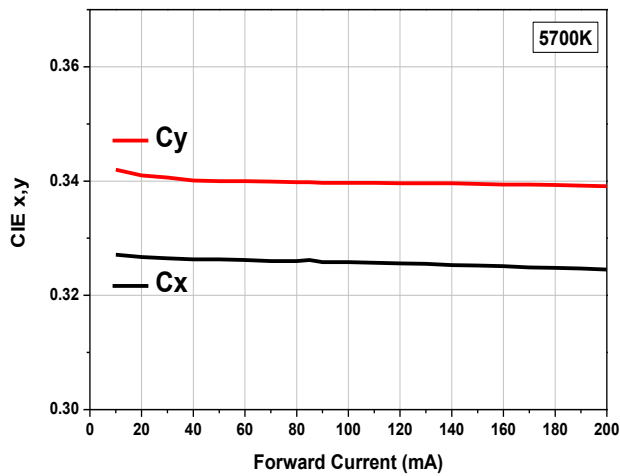
(Ta = 25°C)



3000K



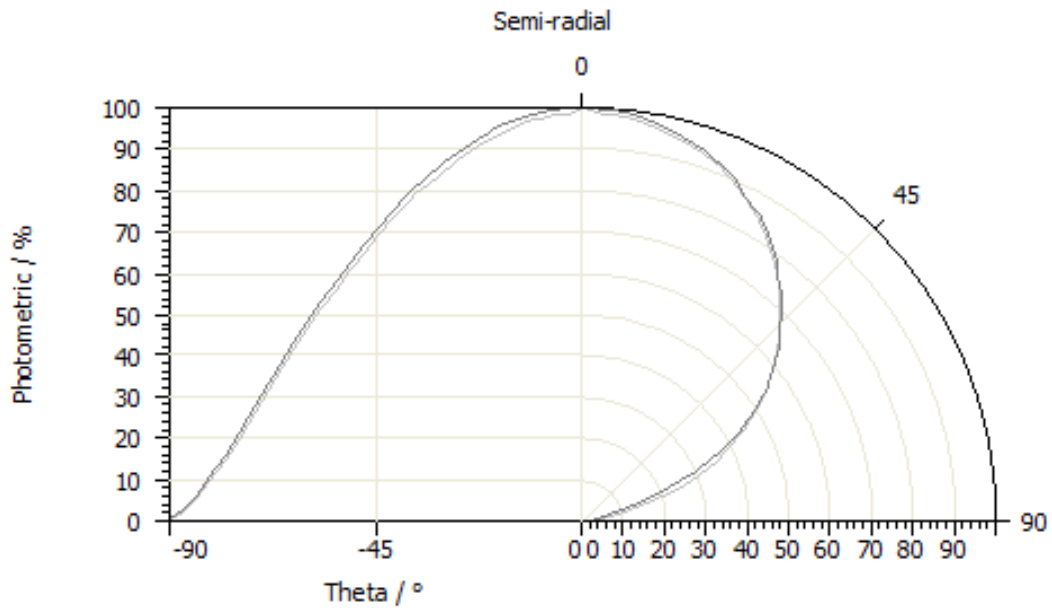
5000K



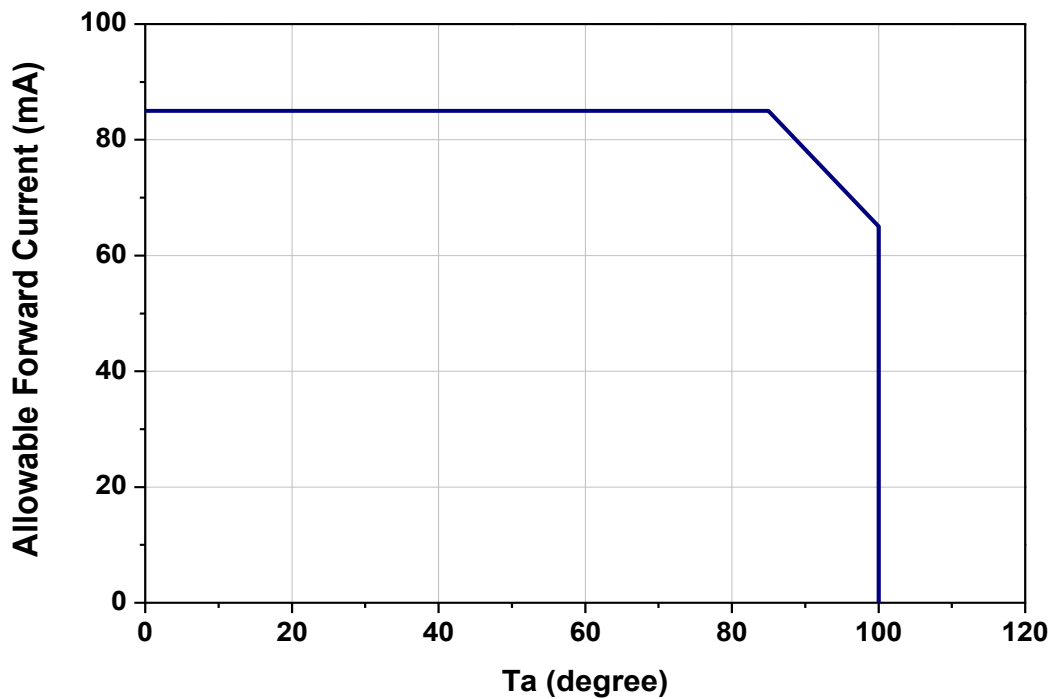
5700K

(5) Radiation Pattern

($I_f=85\text{mA}$, $T_a=25^\circ\text{C}$)



(6) Derating curve



8. Reliability

(1) Test items and results

NO	Test Item	Standard Test Method	Test Conditions	Note	Number of Damaged
1	Temperature Cycle	JEITA ED-4701 100 105	-40℃ ~ 25℃ ~ 100℃ ~ 25℃ 30min. 5min. 30min. 5min	200 cycles	0/10
2	High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000 hrs	0/10
3	Temperature Humidity Storage	JEITA ED-4701 100 103	Ta=85℃, RH=85%	1000 hrs	0/10
4	Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40℃	1000 hrs	0/10
5	Steady State Operating Life	-	Ta=25℃, I _F =85mA	1000 hrs	0/10
6	Steady State Operating Life of High Temperature	-	Ta=85℃, I _F =85mA	1000 hrs	0/10
7	Steady State Operating Life of High Humidity Heat	-	Ta=85℃, RH=85%, I _F =85mA	1000 hrs	0/10
8	Electro-Static Discharge Threshold	ESD (HBM)	1500Ω, 100pF (Forward/ Reverse)	6KV	0/10

(2) Criteria for judging the damage

ITEM	Symbol	Test Condition	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	I _F =85mA		USL *1 × 1.1
Luminous Flux	lm	I _F =85mA	LSL*2 × 0.7	

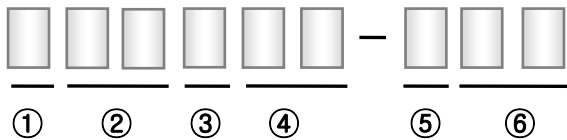
*1) U.S.L.: Upper Standard Level *2) L.S.L.: Lower Standard Level

9. Packing

(1) Label Information

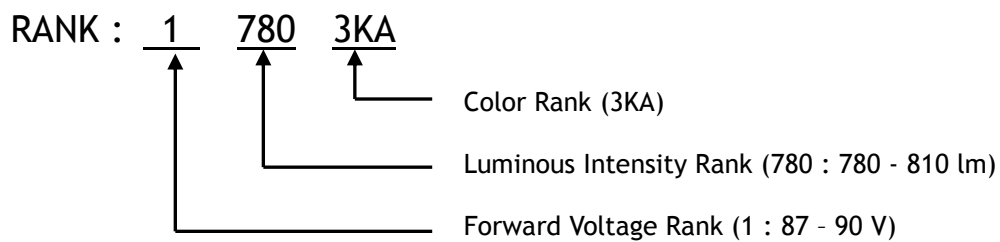


(2) Lot Number



- ① WOOREE LED Initial
- ② Year (10 for 2010, 11 for 2011)
- ③ Month (A for Jan., B for Feb., ... , N for Dec.)
- ④ Day (01 for 1,....31 for 31)
- ⑤ Product Number (0 , 1) : Normal Lot : “ 0 “ , Merge Lot : “1”
- ⑥ Product Number (01,02,03, ... ,99)

(3) Rank Code description



10. Revision History

Spec NO.			
Title	Specification for Approval		
Times	Date	Summary of revision	Remarks
1		INITIAL ISSUE	R(0)